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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,786	07/28/2006	Nobuharu Tahara	UNIU79.071APC	2110

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EXAMINER	
NEGRELLI, KARA B	

ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
12/22/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/587,786	TAHARA ET AL.	
	Examiner	Art Unit	
	KARA NEGRELLI	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 December 2009*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) *3,4,6,11 and 13* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,7-10,12,14 and 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Any rejections stated in the previous Office Action and not repeated below are withdrawn.

3. The instant office action contains new positions using prior art which was applied in rejections previously presented. Therefore, this action is properly made NON-FINAL.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The term "relative to a film" in claim 15 is a relative term which renders the claim indefinite. The term "relative to a film" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "relative to a film" is used to describe the formation of spherical crystal structures.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-2, 5, 7-10, 12, and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minegishi et al. (US 2003/0094409) and further in view of Ross et al. (US 6,521,690).

9. Minegishi et al teach a process for preparing a hollow fiber membrane comprising discharging a polyvinylidene fluoride (PVDF) resin in a poor solvent at a temperature above phase separation temperature and then cooling the liquid raw material (paragraph [0010]). Minegishi et al. further teach that the polymer solution is cooled from a temperature above the phase separation temperature in the range of 80ºC to 175ºC by cooling liquid, meaning the PVDF/poor solvent solution is above 170ºC and below the thermal decomposition temperature of the PVDF resin. In this process, microspheric structures connect to each other to form a membrane having pores (paragraphs [0023] and [0024]). Examples of poor solvents include dimethyl phthalate (paragraph [0022]). The membrane of Minegishi et al. has pores with an average diameter of from 0.01 to 20 μm, preferably 0.01 to 10 μm (paragraph [0052]), the pore diameter of which overlaps the instantly claimed range (claim 10). Minegishi et al. also teach that membrane has a porosity of from 40% to 75% (See claim 11, US

2003/0094409). Figure 4 of Minegishi et al. further shows a microstructure with a resin phase continuous in a three-dimensional manner with a network structure with irregularly pore spaces between. Paragraph [0032] of Minegishi et al. teaches that inorganic additives are preferably added to the polymer composition.

10. Minegishi et al. teach that additives such as inorganic salts can be added to the membrane (paragraph [0032]), but do not expressly teach that the salts are organized clay such as inorganic silicates, said silicates of which are prepared using alkylene oxide or onium ions.

11. However, Ross et al. teach a modified clay/polymer composition using a thermoplastic polymer and a smectite clay modified with organic chemicals (column 4, lines 50-52). Ross et al. further teach that the thermoplastic polymer can comprise polyvinylidene fluoride resin (column 10, line 15) and the smectite clay is reacted with one or more ammonium compounds and one or more anionic organic materials before being dispersed into the polymer resin (column 5, lines 34-39). The smectite clay disclosed in Ross et al. can include phyllosilicates which can be assembled into layers (column 5, lines 40-43 and lines 46-49). The ammonium compound can comprise alkoxylated groups such as alkylene oxide (column 6, line 64 - column 7, line 16). The clays of Ross et al. are ground to a size of less than 325 mesh (less than 44 microns, the size of which overlaps the instantly claimed range). It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951,

1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

12. Claim 15 state properties of the porous film: suppression of the formation of spherical crystal structures within poly(vinylidene fluoride) due to the presence of organized clay. While Ross et al. do not elaborate on the property, Ross et al. teach essentially the same composition: a polymer which may comprise poly(vinylidene fluoride) combined with organized clay. One of ordinary skill in the art would have a reasonable basis to believe the polymer composition of Ross et al. to exhibits essentially the same properties. Since the PTO cannot conduct experiments, the burden of proof is shifted to the applicants to establish an unobvious difference. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977).

13. It would have been obvious to one of ordinary skill in the art to use the organized clay compositions of Ross et al. in the process for producing a membrane taught by Minegishi et al. because the compositions both comprise poly (vinylidene fluoride) with inorganic materials. Using the inorganic clay made by Ross et al. in the invention of Minegishi would provide a film which would exhibit improved tensile strength, tensile modulus, gas barrier, and heat distortion temperatures (column 11, lines 14-17). Furthermore, the organized clays are easily dispersed into both polar and nonpolar thermoplastic polymers, the organoclay can be made inexpensively, and their polymers do not need compatibilizers or grafting to allow the organoclay to be dispersed within it (column 4, lines 50-59).

Response to Arguments

14. Applicant's arguments with respect to claims 1,2, 7, 9, 10, and 12 Applicant's arguments, see pages 5-6 filed December 2, 2009, with respect to the rejection of claims 1, 2, 7, 9, 10, and 12 have been fully considered and are persuasive. The rejection of claims 1, 2, 7, 9, 10, and 12 under 35 U.S.C 102 (b) over Minegishi has been withdrawn.

15. Applicant's arguments with respect to claim 7 under 35 U.S.C. 112, second paragraph filed December 2, 2009 have been fully considered but they are not persuasive. Claim 7 still recites "irregularly" shaped pores. The term "irregularly" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "irregularly" is used to describe the resin used to produce a film and the pore spaces within said film.

16. Minegishi still applies as prior art under 35 U.S.C 103 (a) when combined with Ross et al., for the reasons provided below.

17. Applicants argue that Minegishi teaches away from claim 1 and that Minegishi teaches away from the teachings of Ross et al. Applicant argues that Minegishi teaches the undesirability of using inorganic particles, and the invention of Minegishi avoids using inorganic particles. Applicant points to paragraph [0007] of Minegishi which reads:

> The melt extraction process yields a relatively uniform, high-strength membrane with no macrovoids; however, poor dispersion of the inorganic particles can cause defects such as pinholes. Furthermore, the melt extraction process has a disadvantage of extremely high production cost. *Minegishi* at paragraph [0007].

18. Applicants' argument is not persuasive. What the paragraph above teaches is not that the mere use of inorganic particles causing pinholes, but rather the ***poor dispersion*** of said particles which leads to pinholes. Paragraph [0032] of Minegishi et al. teaches that inorganic additives are **preferably** added to the polymer composition. Therefore, one of ordinary skill in the art would **not** be led by Minegishi to avoid using inorganic particles.

19. Applicant argues that because Minegishi teaches avoiding methods that use inorganic particles, Minegishi teaches away from combination with Ross et al. As described above, Minegishi teaches that the ***poor dispersion*** of inorganic particles causes pinholes, not their mere presence in the composition. Additionally, paragraph [0032] of Minegishi et al. teaches that inorganic additives are preferably added to the polymer composition of the invention. Therefore, Minegishi does not, in fact, teach away from using inorganic materials and also does not teach away from combination with Ross et al.

20. Both Ross et al. and Minegishi et al. teach inorganic materials dispersed in polymer compositions which may comprise polyvinylidene fluoride (see rejection above). Therefore, there is provided a rational basis for asserting that the resin-combined clay of Ross et al. would also be of suitable use in the invention of Minegishi.

21. As described in the rejection above, it would have been obvious to one of ordinary skill in the art to use the organized clay compositions of Ross et al. in the process for producing a membrane taught by Minegishi et al. because the compositions made by Ross et al. exhibit improved tensile strength, tensile modulus, gas barrier, and heat distortion temperatures (column 11, lines 14-17). Furthermore, the organized clays are easily dispersed into both polar and nonpolar thermoplastic polymers, the organoclay can be made inexpensively, and their polymers do not need compatibilizers or grafting to allow the organoclay to be dispersed within it (column 4, lines 50-59).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARA NEGRELLI whose telephone number is (571)270-7338. The examiner can normally be reached on Monday through Friday 9:30 am EST to 6:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571)272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KARA NEGRELLI/
Examiner, Art Unit 1796

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796